

FIG. 1
(PRIOR ART)

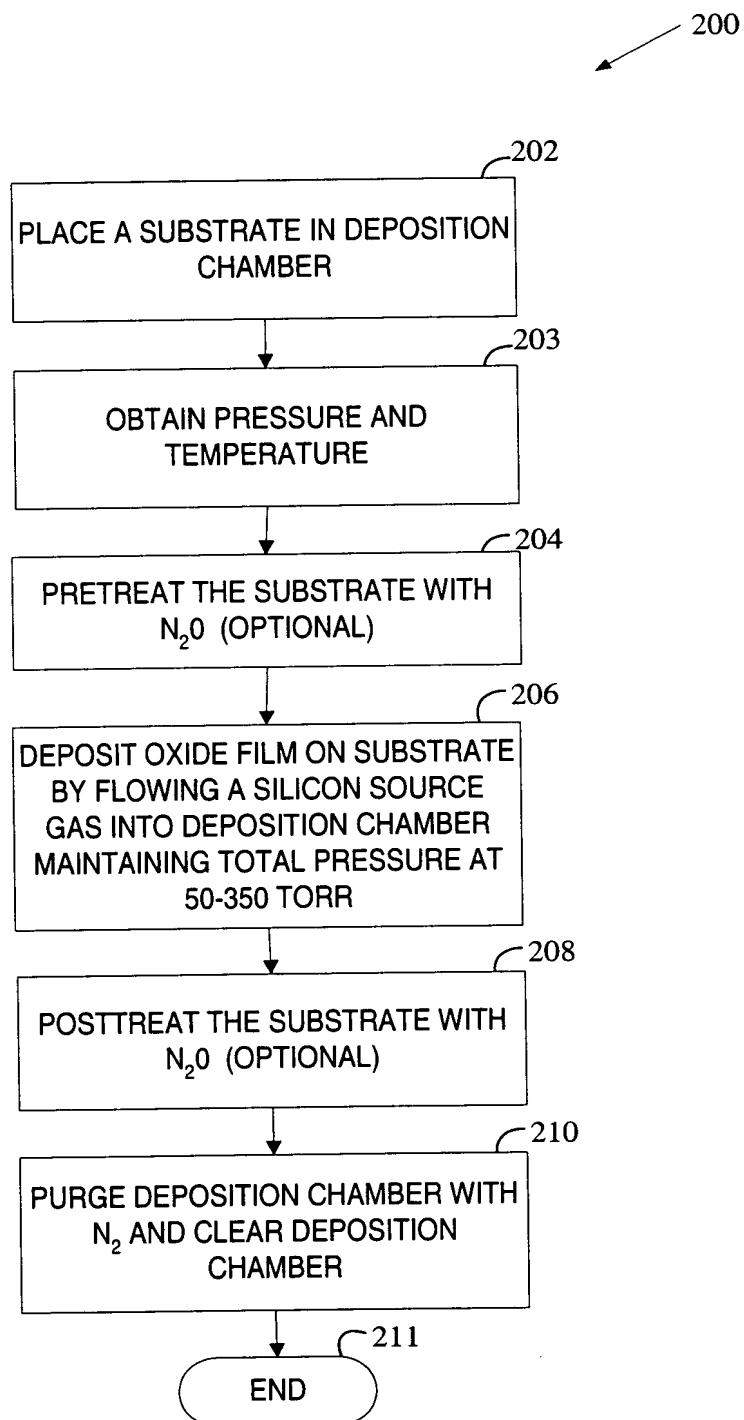


FIG. 2

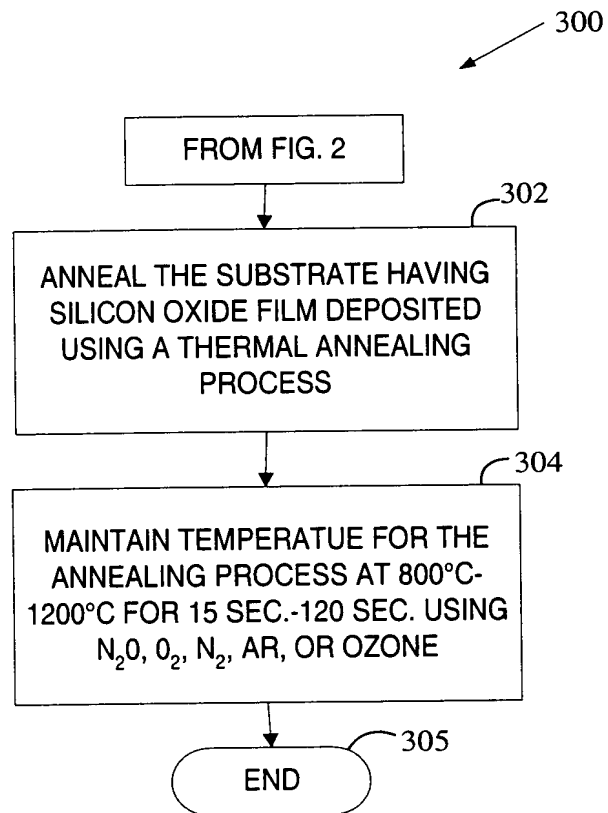


FIG. 3

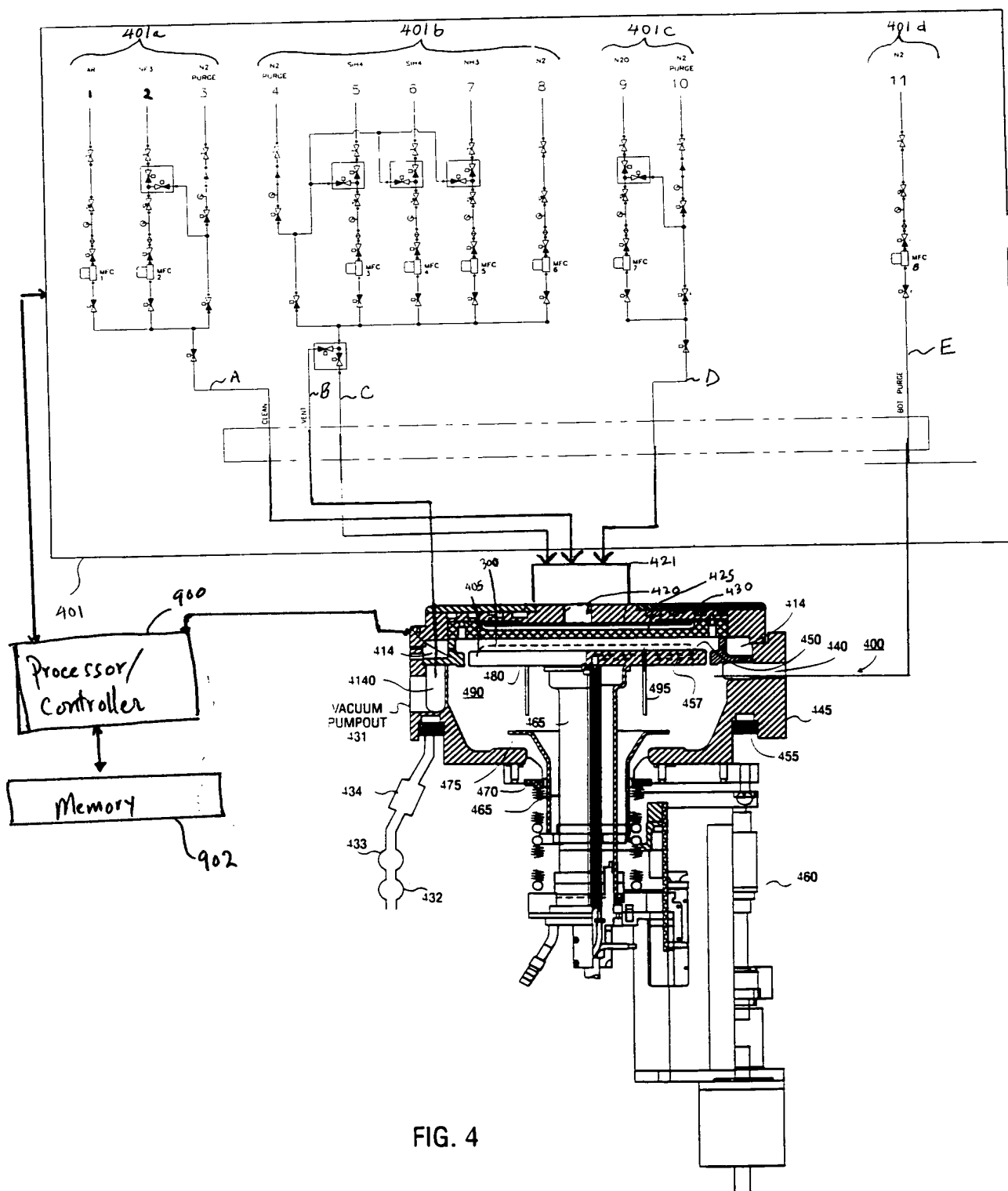


FIG. 4

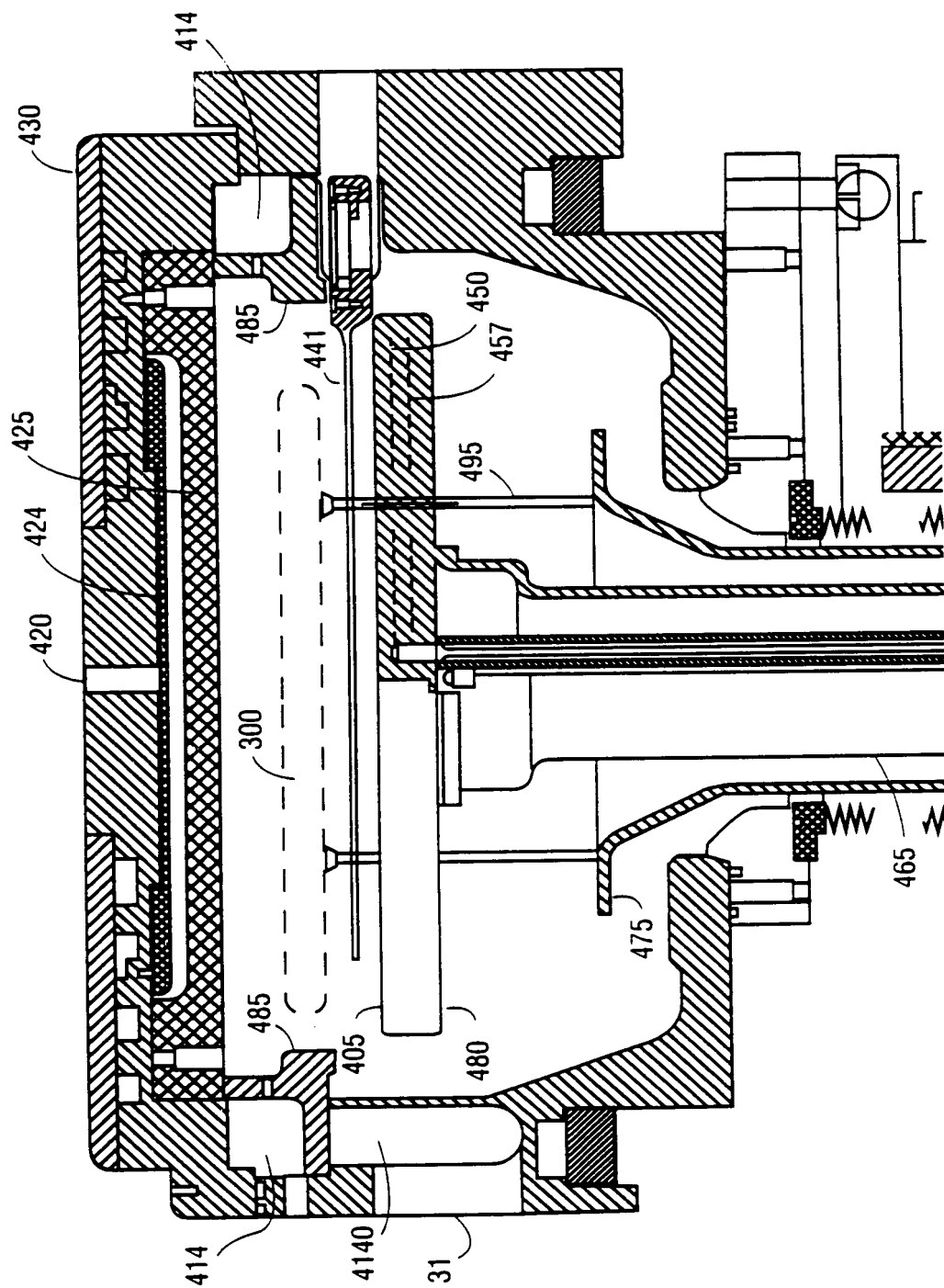


FIG. 5

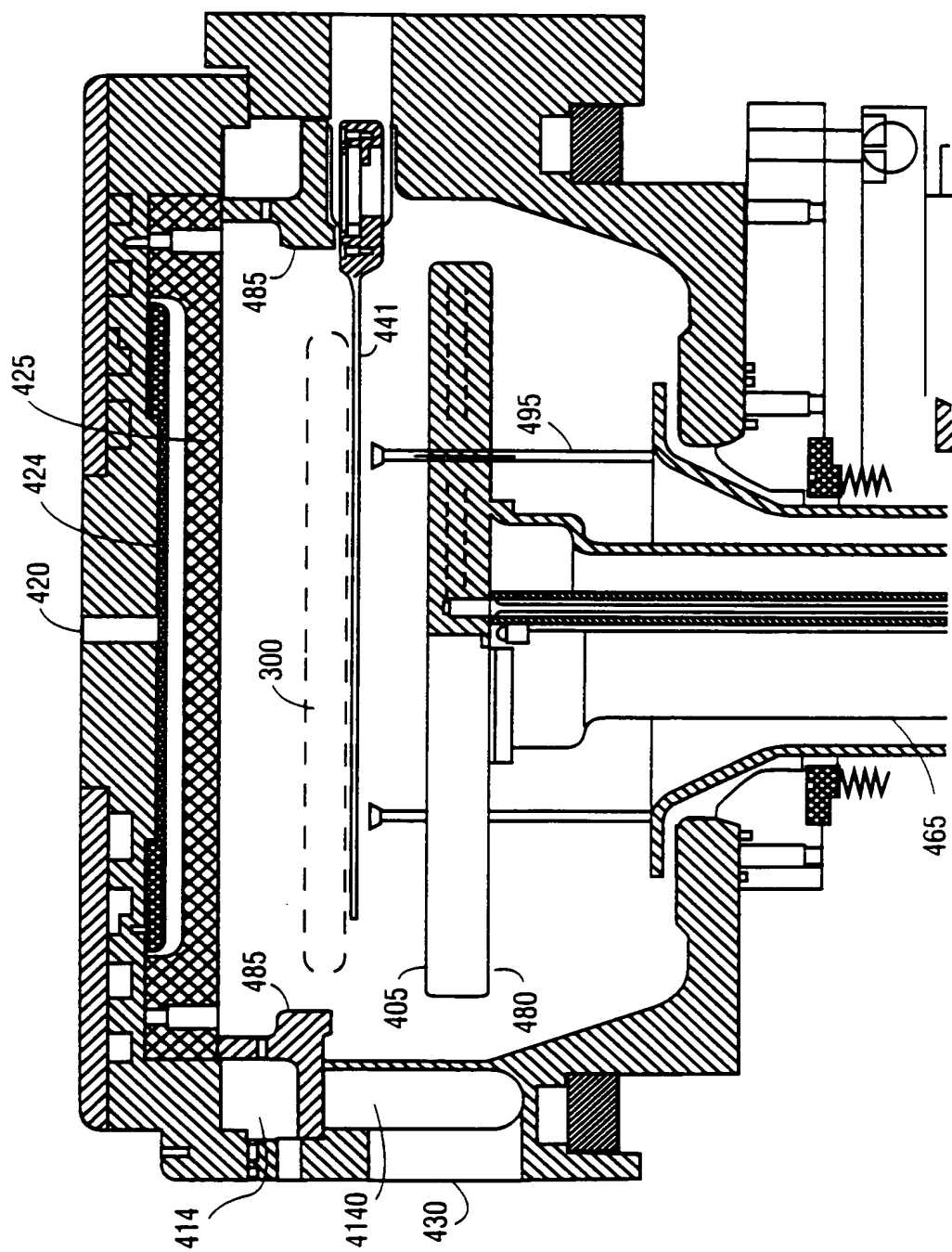


FIG. 6

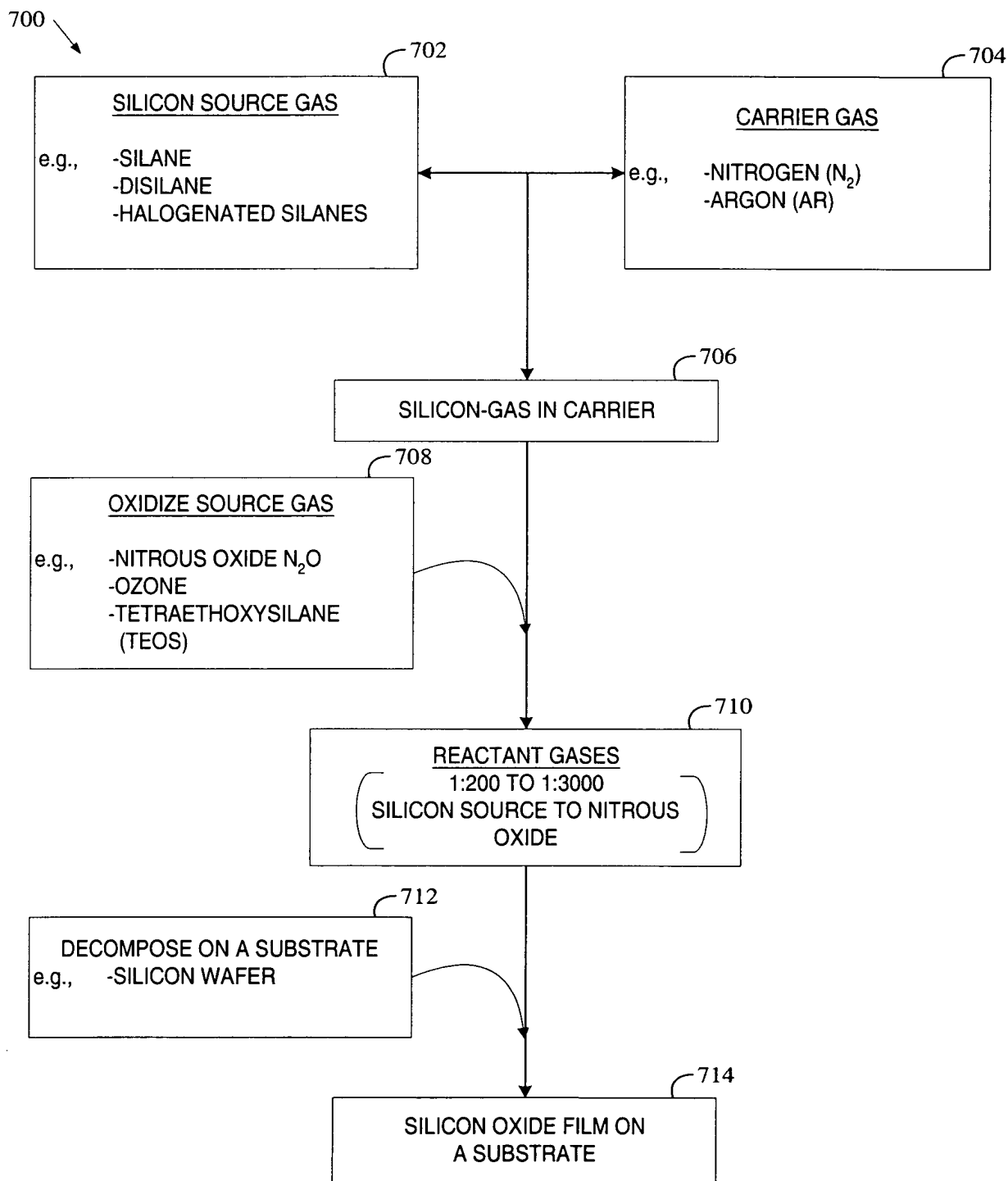


FIG. 7

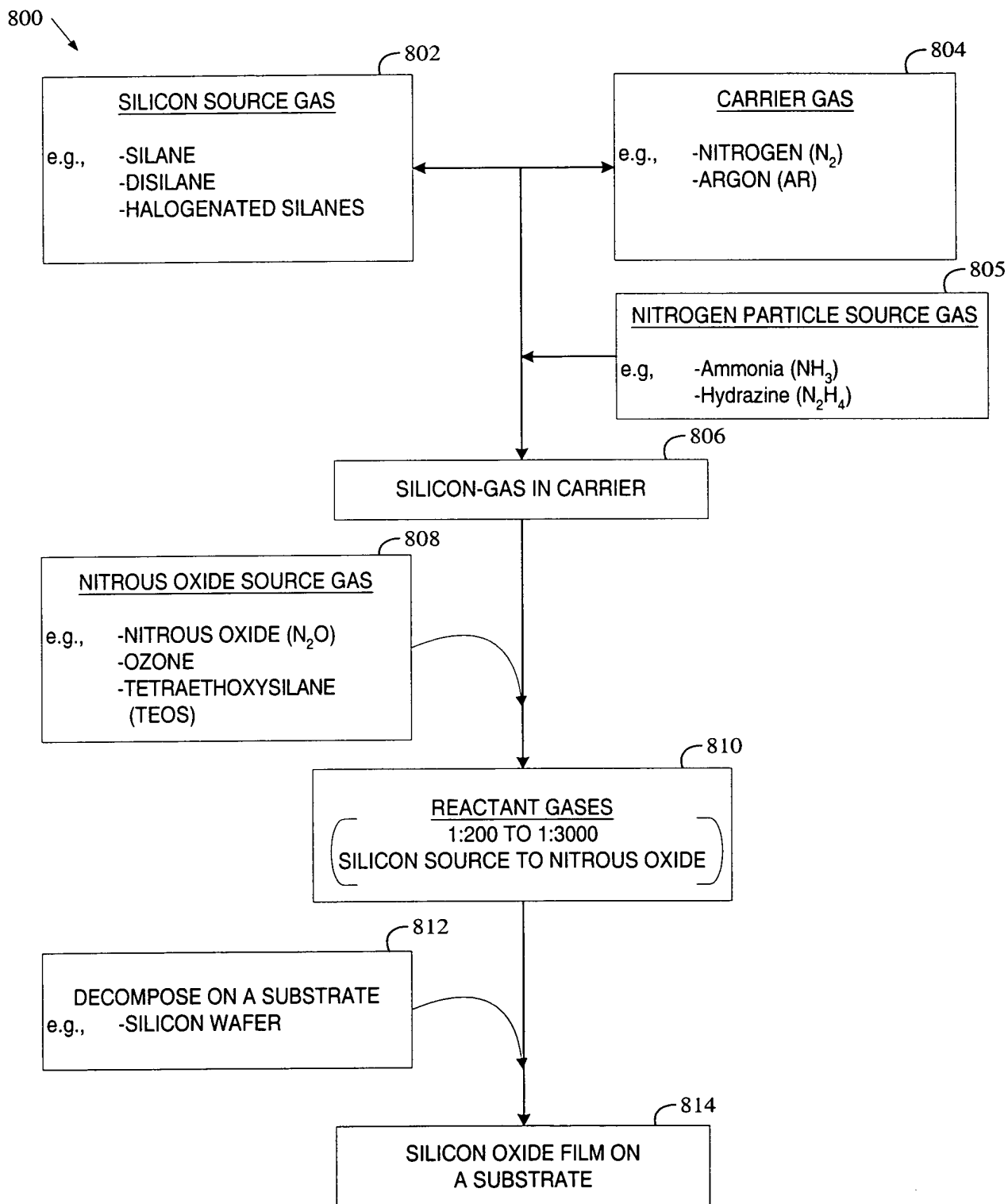


FIG. 8

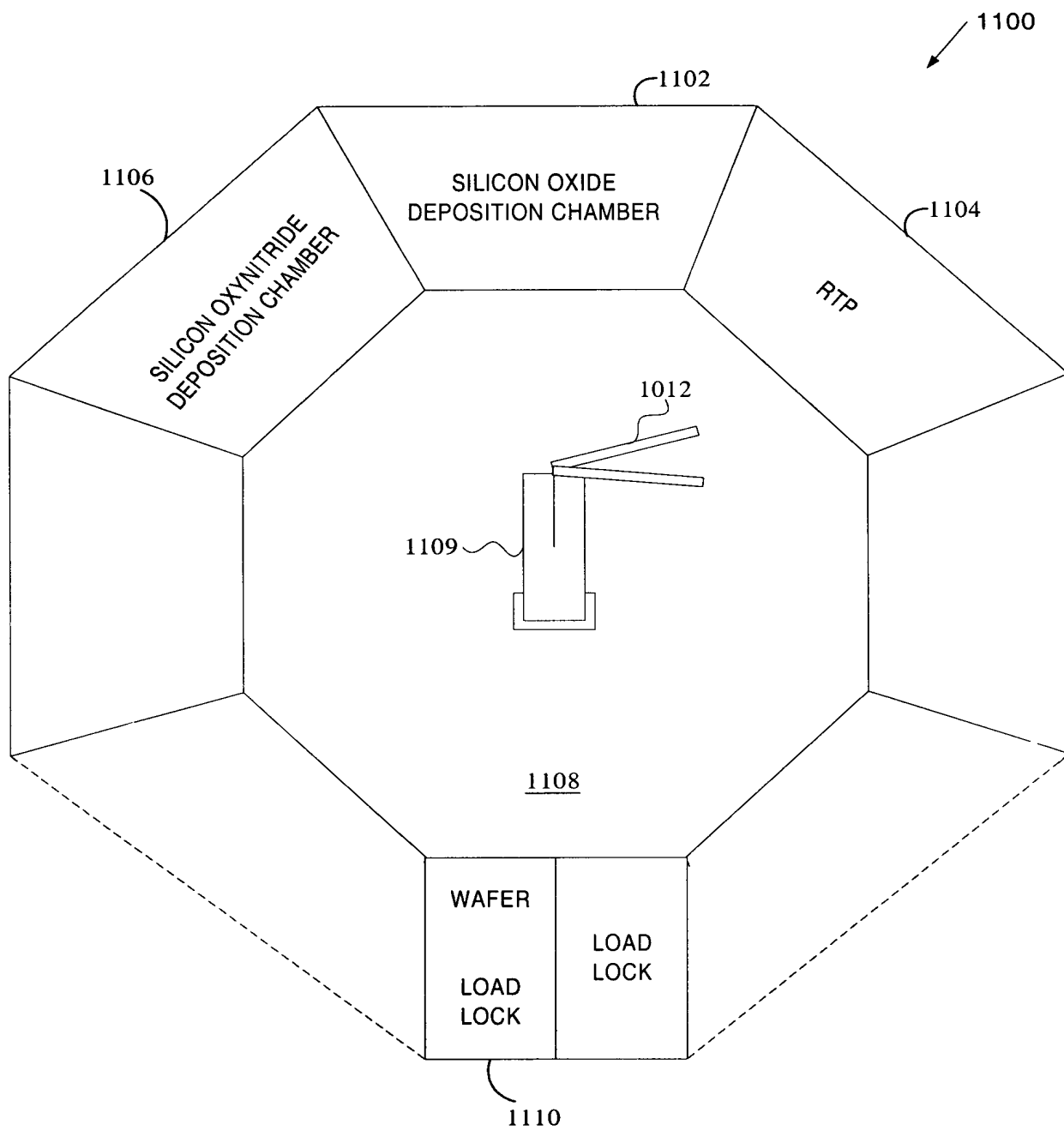


FIG. 9

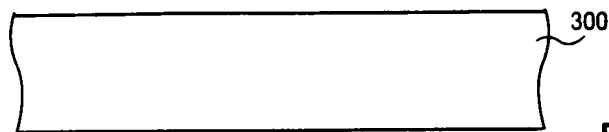


FIG. 10A

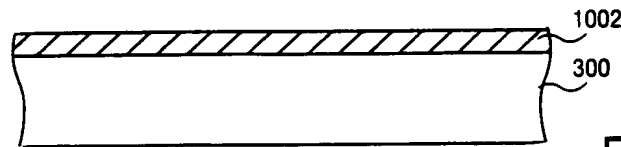


FIG. 10B

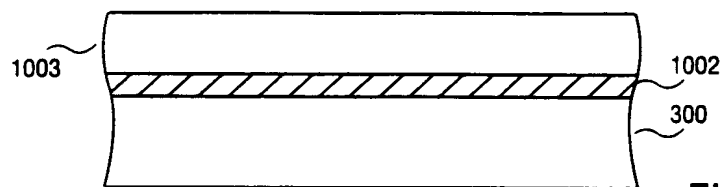


FIG. 10C

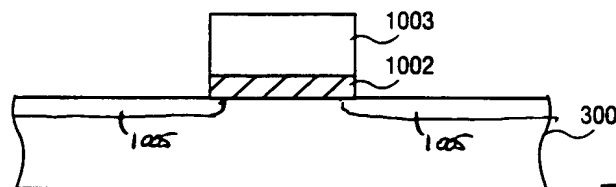


FIG. 10D

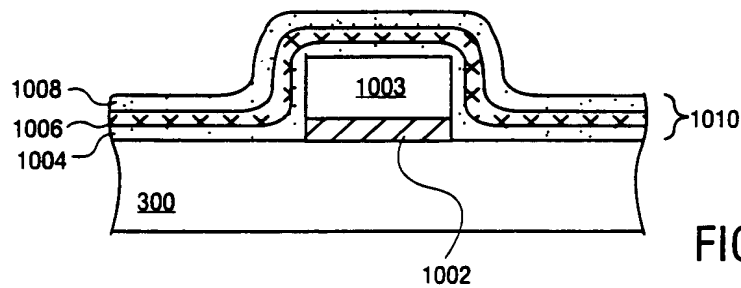


FIG. 10E

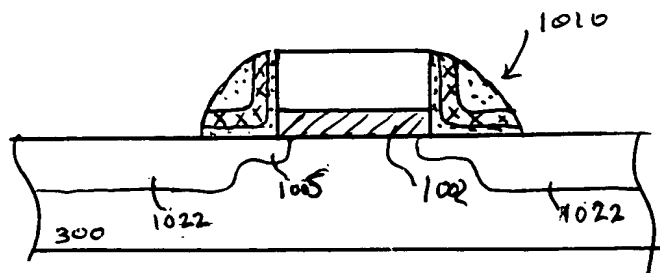


FIG. 10F

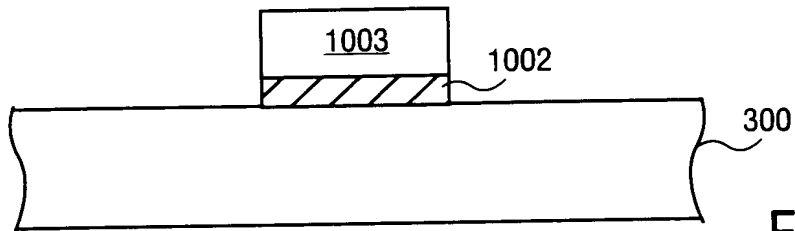


FIG. 10G

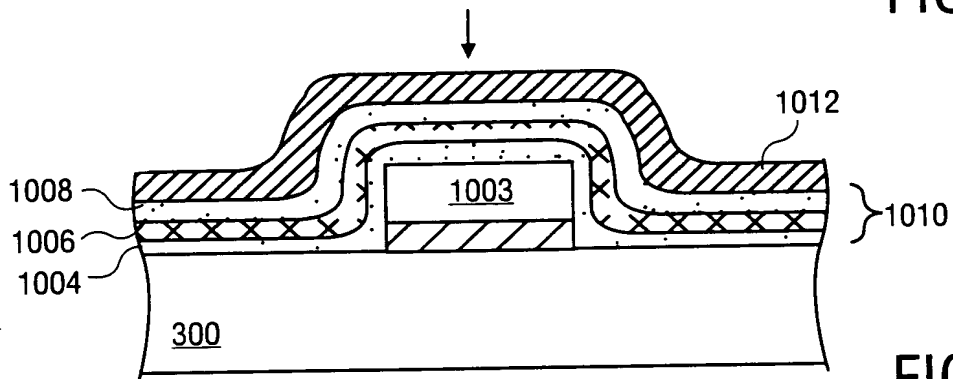


FIG. 10H

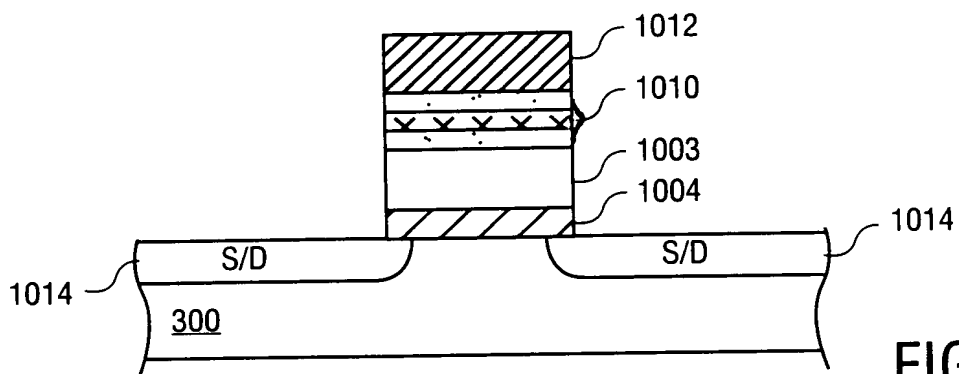
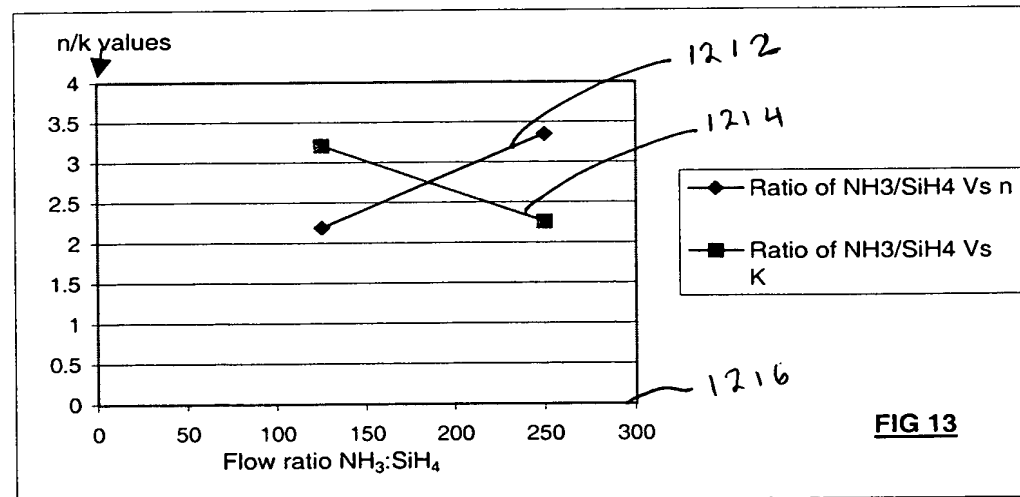
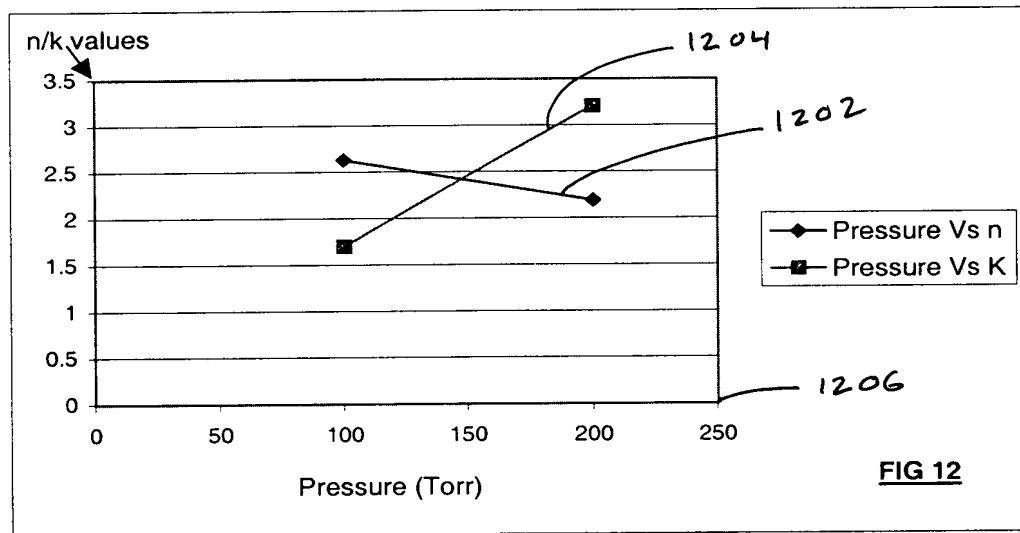
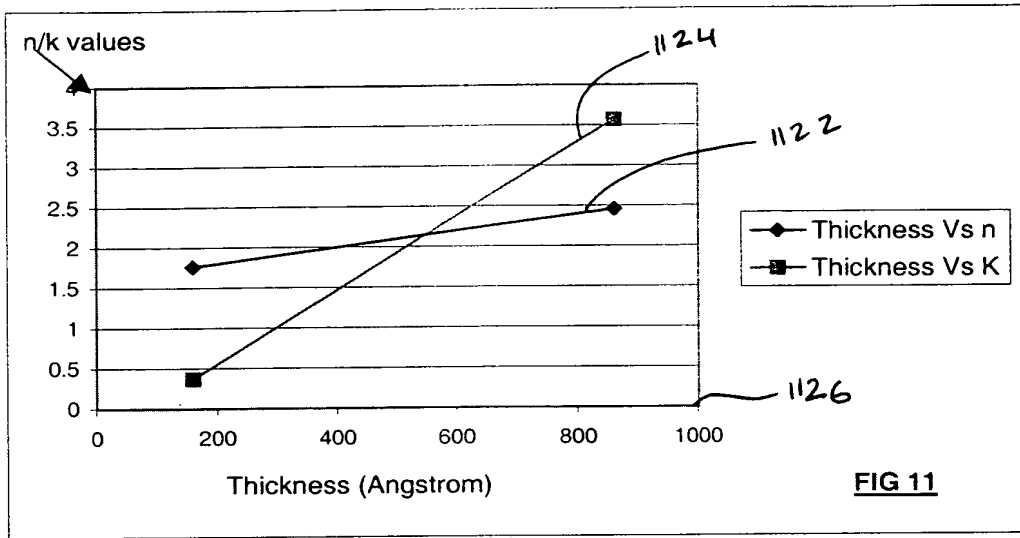


FIG. 10I

10041026-12001



Step Coverage vs N2O/SiH4 ratio

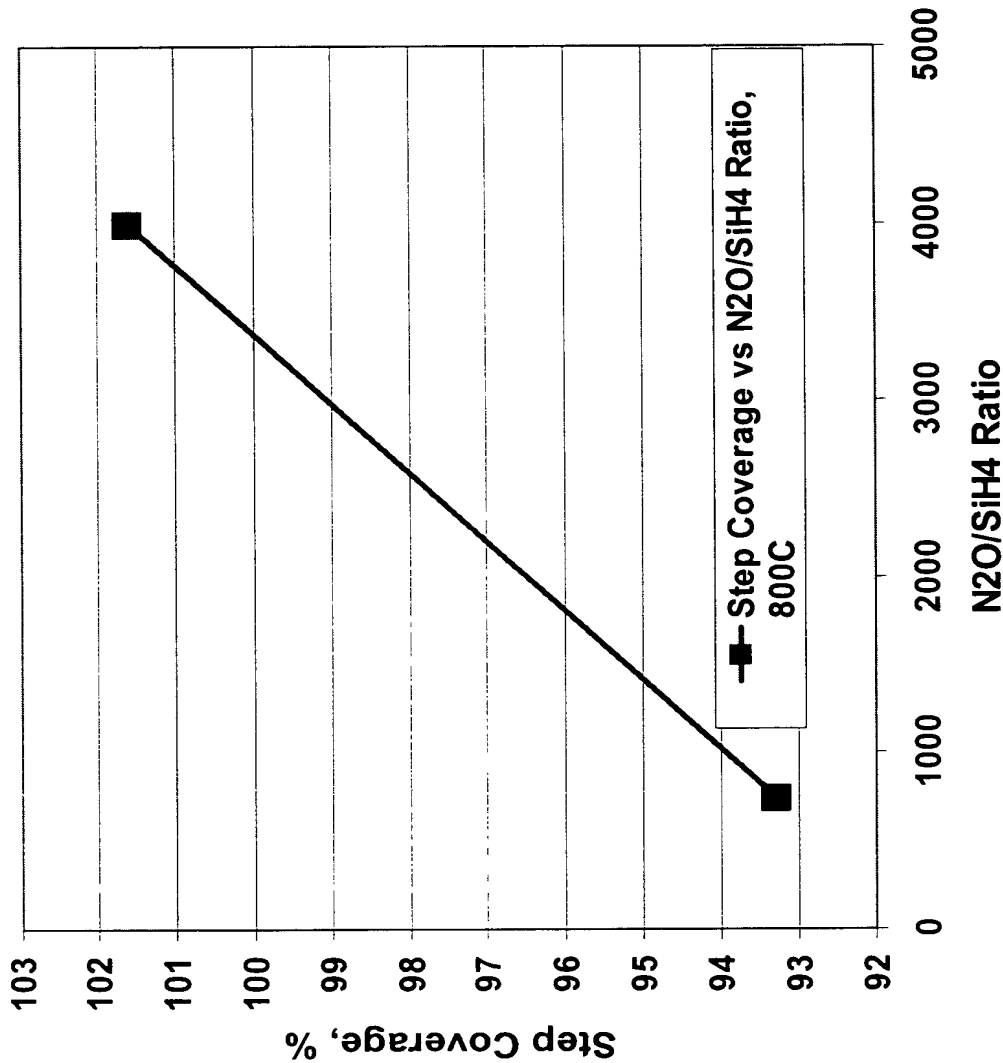


FIG. 14

Step Coverage vs Temperature

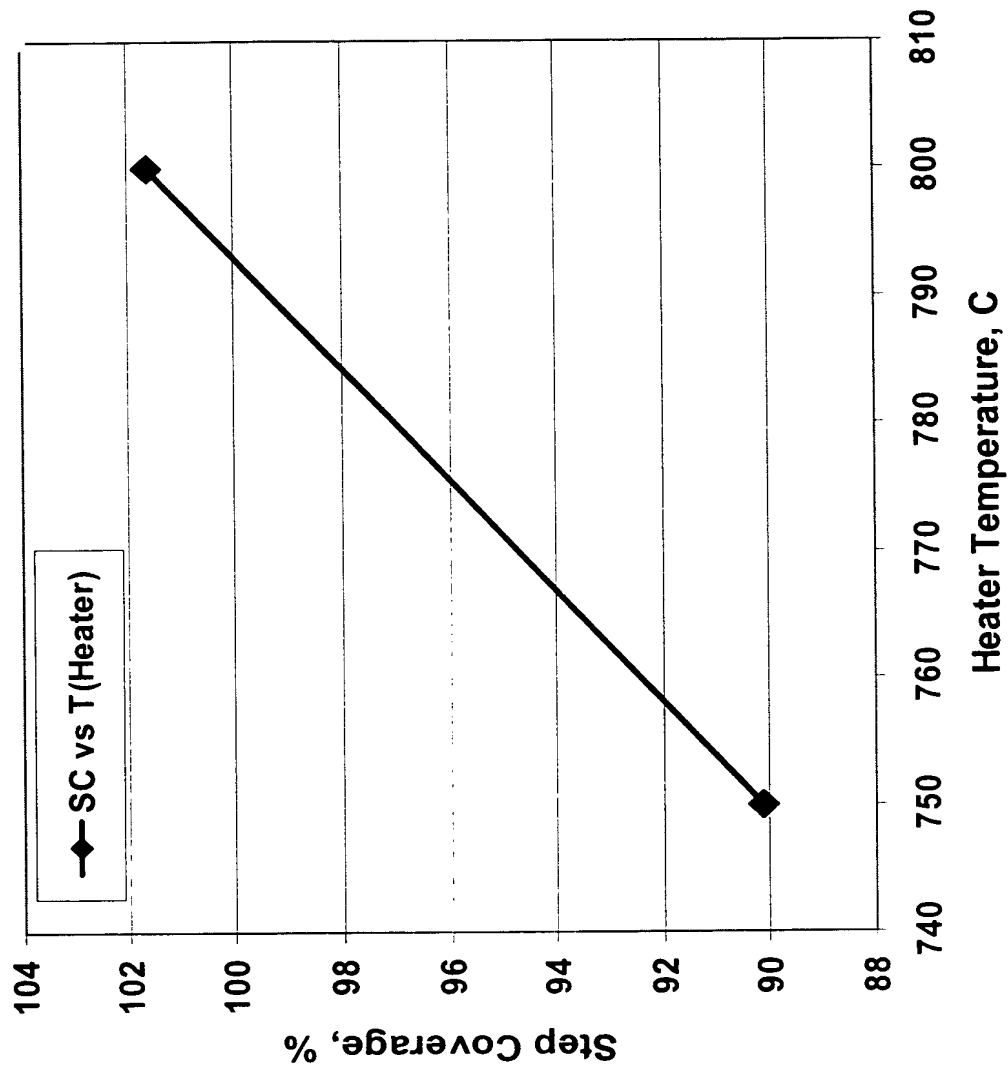


FIG. 15

1		60Å	70Å	150Å	1000Å
2		Silicon oxide film	Silicon oxide film	Silicon oxide film	Silicon oxide film
	Pretreatment				
	Time	10 seconds	10 seconds	10 seconds	10 seconds
	Temperature	750 °C	800 °C	700 °C	800 °C
	Pressure	200 Torr	200 Torr	200 Torr	200 Torr
	N ₂ O into chamber	500 sccm	1200 sccm	1500 sccm	4000 sccm
	SiH ₄ divert line	1 sccm	2 sccm	2 sccm	20 sccm
	SiH ₄ into chamber	0 sccm	0 sccm	0 sccm	0 sccm
	N ₂ into chamber (carrier for SiH ₄)	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	N ₂ into bottom chamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm
3	Deposition				
	Time	40 seconds	44 seconds	53.2 seconds	75 seconds
	Temperature	750 °C	800 °C	750 °C	750 °C
	Pressure	200 Torr	200 Torr	200 Torr	200 Torr
	N ₂ O into chamber	500 sccm	1200 sccm	1500 sccm	4000 sccm
	SiH ₄ divert line	0 sccm	0 sccm	0 sccm	0 sccm
	SiH ₄ into chamber	1 sccm	2 sccm	2 sccm	20 sccm
	N ₂ into chamber (carrier for SiH ₄)	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	N ₂ into bottom chamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm
4	Posttreatment				
	Time	10 seconds	10 seconds	10 seconds	10 seconds
	Temperature	750 °C	800 °C	750 °C	750 °C
	Pressure	200 Torr	200 Torr	200 Torr	200 Torr
	N ₂ O into chamber	500 sccm	1200 sccm	1500 sccm	4000 sccm
	SiH ₄ divert line	0 sccm	2 sccm	0 sccm	0 sccm
	SiH ₄ into chamber	0 sccm	0 sccm	0 sccm	0 sccm
	N ₂ into chamber (carrier for SiH ₄)	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	N ₂ into bottom chamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm
5	Purge				
	Time	10 seconds	10 seconds	10 seconds	10 seconds
	N ₂ into chamber (carrier for SiH ₄)	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	N ₂ into bottom chamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm

TABLE 1: PARAMETERS FOR MAKING SILICON OXIDE FILMS